

REMARKS

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

Claims 1-9 have been canceled in favor of new claims 10-12, which better define the subject matter Applicant regards as the invention. Support for the features recited in claims 10-12 is provided in the original claims and the specification on page 6, lines 19-26, page 7, lines 13-21, page 8, lines 20-28, page 9, lines 1-9, page 12, lines 5-10, page 13, lines 7-16, and page 14, lines 2-8.

Claims 1-9 were rejected, under 35 USC §103(a), as being unpatentable over Whinnett (US 5,999,826) in view of Fukawa (US 6,243,412). To the extent these rejections may be deemed applicable to new claims 10-12, the Applicant respectfully traverses.

Independent claims 10 and 12 recite that a multi-user type interference canceller is used as an interference canceller for a code-multiplexed signal. For example, if a Viterbi equalizer (MLSE) is used as an interference canceller for a code-multiplexed signal and the receiving process uses a combination of an adaptive array antenna and a Viterbi equalizer, there is a problem that the amount of receiving process increases exponentially. This problem occurs because a CDMA system has

generally more multiple channels received at the same time and frequency than does a TDMA system, an FDMA system, or other access system. However, if a multi-user type interference canceller is used, it is possible to reduce the amount of receiving process relatively, because the receiving process increases only proportional to the number, N , of channels that are cancelled.

Additionally claims 10 and 12 recite that a difference between an adaptive array antenna (AAA) processed signal and a replica signal, generated in the interference canceller, is used as an error signal for calculating a weight used for AAA processing.

An advantage of the above-noted features is that the replica signal generated in the interference canceller is used as a reference signal required in the AAA processing. As a result, a radio base station apparatus does not require a reference signal generation circuit, thereby reducing the amount of processing and circuit scale.

By contrast to the above-described features, Whinnett teaches how to adjust the weight of an array antenna. The claimed invention recites, for a radio base station that has both an adaptive array antenna and an interference canceller, the specific type of interference canceller that is used and the

signal that is used to calculate the weight of the adaptive array antenna. Whinnett does not have an interference canceller and does not teach or suggest any of these distinguishing features.

In embodiment 1, Fukawa discloses: (1) delaying a decision signal by one symbol, (2) multiplying this signal by a feedback filter coefficient, (3) estimating intersymbol interference, (4) subtracting this intersymbol interference from the signal after adaptive array antenna processing, (5) generating an intersymbol interference removed signal, using the difference between the intersymbol interference removed signal and the decision signal as an error signal, and (6) calculating an antenna directivity weight.

However, the error signal of the present invention represents the difference between a signal after AAA processing and a replica signal. This signal after AAA processing refers to a signal before interference cancellation and bears no relationship to Fukawa's intersymbol interference removed signal, which is a signal after interference removal. A replica signal according to the present invention is used to cancel an interference component and bears no relationship to Fukawa's "decision signal," which is only a result of a hard decision of a received signal. Thus, Fukawa discloses or suggests nothing about the above-noted feature of the present invention.

In addition, Fukawa discloses using a Viterbi algorithm operation circuit and use of a replica signal (see embodiment 2). However, Fukawa's Viterbi algorithm operation circuit bears no relationship to the multi-user type interference canceller described above.

Furthermore, Fukawa does not disclose use of a replica signal in the weight calculation for an adaptive array antenna.

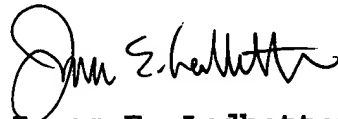
Fukawa, therefore, bears no relationship to the present invention. Therefore, Whinnett and Fukawa disclose configurations that differ considerably from the present invention and their combined teachings do not suggest the distinguishing features of the present invention, as described above. Thus, Whinnett and Fukawa cannot achieve the same effect and advantage as the present invention.

Accordingly, Applicant submits that the applied references do not suggest the subject matter defined by claims 10 and 12. Therefore, allowance of claims 10 and 12 and dependent claim 11 is warranted.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



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